

24

<b>Notice of Allowability</b>	Application No.	Applicant(s)	
	10/057,179	MA ET AL.	
	Examiner	Art Unit	
	Jason M. Perilla	2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed January 23, 2006.
2. ☒ The allowed claim(s) is/are claims 1-7, 9, 11-16, 18, and 20 renumbered respectively as claims 1-16.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>20060331</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance                                    |
|   | 9. <input type="checkbox"/> Other _____  |

**DETAILED ACTION**

1. Claims 1-7, 9, 11-16, 18, and 20 are pending in the instant application.

**EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Clifton D. Mueller on March 31, 2006.

The application has been amended as follows wherein claims 9 and 18 are replaced in their entirety:

Regarding claim 1, in line 4, "symbol transmitted" is replaced by --transmitted symbol--.

Regarding claim 2, in line 2, "MPSK" is replaced by --multiple phase shift keying (MPSK)--.

Regarding claim 9, the following version replaces all prior versions in their entirety:

9. The method of claim 1 ~~further comprising:~~

~~—determining a posterior covariance matrix  $\hat{\Sigma}_p$  of the channels using a FFT matrix  $\mathbf{W}$ , the previous estimate of the transmitted symbol  $\mathbf{X}_p$ , a channel convergence matrix  $\Sigma^{-1}$ , and a Gaussian noise variance  $\sigma^2$  as  $\hat{\Sigma}_p = (\mathbf{W}^H \mathbf{X}_p^H \mathbf{X}_p \mathbf{W} / \sigma^2 + \Sigma^{-1})^{-1}$ ;~~

~~—where determining a posterior means comprises determining a the posterior mean  $\hat{h}_p$  of a channel impulse response as  $\hat{h}_p = \hat{\Sigma}_p (\mathbf{W}^H \mathbf{X}_p^H \mathbf{Y} / \sigma^2 + \Sigma^{-1} E\{\underline{h}\})$ , where the received symbol is  $\mathbf{Y}$ , and  $E\{\underline{h}\}$  is a the channel impulse response;~~

~~—determining a channel update coefficients matrix  $\mathbf{C}$  for recovering the next estimate of the transmitted symbol; and~~

~~applying the coefficient matrix  $\mathbf{C}$  to the posterior mean  $\hat{h}_p$ , the FFT matrix  $\mathbf{W}$ , and the received symbol  $\mathbf{Y}$  according to  $\tilde{\mathbf{X}}_{p+1} = \mathbf{C}^{-1} (\hat{h}_p^H \mathbf{W}^H \mathbf{Y})^T$  to optimize the next estimate of the transmitted symbol  $\tilde{\mathbf{X}}_{p+1}$ .~~

Regarding claim 11, in line 4, "symbol transmitted" is replaced by –transmitted symbol--.

Regarding claim 18, the following version replaces all prior versions in their entirety:

18. The system of claim 12 further comprising:

~~—means for determining a posterior covariance matrix  $\hat{\Sigma}_p$  of the channels using the FFT matrix  $\mathbf{W}$ , the initial estimate of the transmitted symbol  $\mathbf{X}_p$ , a channel convergence matrix  $\Sigma^{-1}$ , and a Gaussian noise variance  $\sigma^2$  as  $\hat{\Sigma}_p = (\mathbf{W}^H \mathbf{X}_p^H \mathbf{X}_p \mathbf{W} / \sigma^2 + \Sigma^{-1})^{-1}$ ;~~

~~—where the means for determining a posterior mean comprises means for determining a the posterior mean  $\hat{h}_p$  of a channel impulse response as  $\hat{h}_p = \hat{\Sigma}_p (\mathbf{W}^H \mathbf{X}_p^H \mathbf{Y} / \sigma^2 + \Sigma^{-1} E\{\underline{h}\})$ , where the received symbol is  $\mathbf{Y}$  and  $E\{\underline{h}\}$  is a the channel impulse response;~~

~~— means for determining a channel update coefficients matrix  $\mathbf{C}$  for recovering the estimate of the next transmitted symbol; and~~

~~means for applying the coefficient matrix  $\mathbf{C}$  to the posterior mean  $\hat{\underline{h}}_p$ , the FFT matrix  $\mathbf{W}$ , and the received symbol  $\mathbf{Y}$  according to  $\tilde{\underline{X}}_{p+1} = \mathbf{C}^{-1}(\hat{\underline{h}}_p^H \mathbf{W}^H \mathbf{Y})^T$  to maximize the next estimate of the symbol  $\tilde{\underline{X}}_{p+1}$ .~~

Claims 1-7, 9, 11-16, 18, and 20 renumbered as claims 1-16, respectively, and the claim dependency is renumbered accordingly.

### ***Allowable Subject Matter***


3. Claims 1-7, 9, 11-16, 18, and 20 renumbered respectively as claims 1-16 are allowed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jason M. Perilla  
March 31, 2006

jmp

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER